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ABSTRACT

The purpose of this study was to determine to what extent music and art can arouse imagery experiences in an audience. Because of the relationship found between imagery and the arts in past research, it was hypothesized that artistic stimuli would have a greater influence on imagery than other kinds of stimuli (art-information or non-artistic). For the study, 92 subjects were divided into seven groups. Six groups were given six different kinds of stimuli: visual artistic (color slides of paintings), auditory artistic (a tape of selections of classical music), visual art-information (a lecture on art which was read by the subjects), auditory art-information (a lecture on music which was heard on a tape), visual non-artistic (color slides of everyday objects), and auditory non-artistic (a tape of sound effects). The seventh group, a control group, received no stimuli. Following the presentation of the stimuli, subjects in all groups answered a questionnaire about the visual or auditory images they experienced during the presentation. Results indicated that music aroused more imagery than art, even through the non-artistic stimuli. This may be due to the fact that listening to music involves the audience more actively than merely looking at art. This study indicates that music therapy might be effective in helping patients get in touch with themselves and that music education might help children become more conscious of themselves in relation to their world. (Author/AV)

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Imagery Arousal as a Function of Exposure to Artistic Stimuli

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Running head: Imagery Arousal as a Function of Artistic Stimuli.

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Imagery Arousal as a Function of Exposure to Artistic Stimili[1]

The interest in the areas of imagery has produced many valuable but restricted efforts in psychological research. Most of this research has dealt with imagery's sensory-perception aspects (Neisser, 1972) or its mediational role in learning and memory (Paivio, 1971). Little of this, however, relates to individual differences in imagery (Galton, 1880) or to imagery as a dependent variable. Most research has been more concerned with discovering what imagery can be used for (as an independent variable) than they have been in investigating imagery as a dependent variable. Almost totally neglected, for example, are the factors that can influence imagery, and the extent to which individuals differ in their capacity to experience imagery. Sheehan and Neisser (1969), for example, have demonstrated that such factors as experimenter effects can influence an individual's self-reported imagery. Thus, the larger purpose of this paper is to examine the role of different types of stimuli and their capacity to arouse imagery. Paivio (1971) has demonstrated that the use of special materials, such as concrete words, can arouse an individual's imagery more than abstract words. In regards to the role of artistic stimuli, Lindauer (1977) points out

that very little has been done with imagery in an aesthetic and artistic content. This leaves a gap in our total understanding, since art can be considered a means of constructing and external idea of the artist's imagery (Richardson, 1969). Karger (1950) goes one step further and explains that "the arts serve as a meeting ground of the inner and outer worlds," (p. 149). Imagery seems to be a mediator from the inner world of the individual to his external representation (art).

Until recently, there has been little empirical interest concerning the effects of artistic stimuli on behavior. These effects are not only of an empirical interest but also relevant in a clinical and educational context as well. Art and music therapies have shown increasing use, and at least in a clinical sense, demonstrated considerable success. One very important part of art and music therapy is imagery. In order for the individual to express his inner world of conflicts in the art process, the person must be able to form images of these conflicts. As Gordon (1972) has stated, "the image, expressing a coordinated meaning of both the sensuous and inner perceptions, is surely closely linked up with man's creative needs and with his activity in the arts," (p. 67).

Not only is imagery important in art and music therapies, but many other theraputic procedures depend on the individual's

ability to form images. These include behavior modification (Rehm, 1973) and the psychoanalytical techniques of Freudian therapy, (Freud, 1965). In general terms, therapy relies on the patient's ability to recall or recreate people and situations. These can be real events or merely fantasy, both of which play a critical part of the person's inner world.

However, this relationship between artistic stimuli and imagery, despite its intuitive appeal, has received very little empirical investigation. In a study by Leonard and Lindauer (1973) it was found that self-rated degree of aesthetic participation (defined by participation in English, art music and theatre areas) was significantly correlated with imagery. However, given the nature of correlational analysis, no causal link could be determined. That is, did aesthetic participation influence imagery or vice verse?

Research has hinted at the important role of imagery in the arts, art therapy and artistic participation. However, there has been no attempt to determine if exposure to artistic stimuli, both music and art, can arouse imagery. This can only be done by employing imagery as a dependent variable.

The purpose of this study was to determine to what extent artistic material, both music and art, can arouse imagery in

the auditory and visual modes? It was felt, because of the relationship found between imagery and the arts in the past, that artistic stimuli, in general, would have a greater influence on imagery than other kinds of stimuli, (e.g. art-information or non-artistic). This study attempts to investigate imagery in response to artistic stimuli, which is of great importance to the theraputic uses of art and imagery.

Method

Experimental design. The design employed in this study was a 3 x 2 x 2 factorial (with a control group). Factor A (a between-subject variable) consisted of the type of stimuli presented: aesthetic (artistic); lectures on aesthetic material (art-information); and non-artistic stimuli (slides and sounds). Also employed as a between-subject measure was the sensory mode (Factor B). The first level of this factor was an auditory presentation: hearing a musical composition (artistic stimuli); hearing a lecture on music (art-information stimuli); and hearing various sounds (non-artistic stimuli). The second level of this factor consisted of a visual presentation: seeing slides of art (artistic stimuli); reading a lecture on art (art-information stimuli); and viewing slides of everyday scenes (non-artistic stimuli). A control group was instructed to sit and relax before given the imagery test. Factor C

(a repeated measure) was the subject's reported self-imagery. There were two levels of this factor: auditory and visual.

Subjects. There were 92 subjects (50 females and 42 males) employed in this study. Prior to the study, the subjects were administered a pre-test to eliminate extreme scores of imagery and aesthetic appreciation. Subject's pre-test scores of imagery and aeasthetic appreciation were also analyzed to ensure that the 7 groups were statistically equivalent prior to any treatment.

Materials. The pre-test consisted of two parts: an aesthetic appreciation questionnaire and 30 items from the Modal Imagery Test (adapted from Munn, 1948). These 30 items were taken from the first half of the Modal Imagery Test. Of the six modes of imagery, only the auditory and visual modes were of major concern. The other modes (cutaneous, olfactory, gustatory and kinesthetic) were used as fillers to conceal the exact focus of the study from the subjects.

There were two types of artistic stimuli: auditory and visual. The visual artistic stimuli consisted of 58 color slides of paintings. These were by 14 artists from Europe and dated from 1750 to 1850. Each slide was presented for 20 seconds. The entire presentation lasted 20 minutes. The auditory artistic stimuli consisted of 14 selections of

classical music by composers from Europe and were from the same period as the art (1750-1850). Each selection consisted of the melody line. This varied in length from 60-120 seconds. The total presentation was 20 minutes in length.

There were two lectures on art: a lecture on art which was read by the subjects and a lecture on music which was heard on a tape (the visual and auditory modes, respectively). The art lecture consisted of 45-page handout on the biographies of the 14 different artists used in this study. The music lecture consisted of a 20 minute recorded lecture pertaining to Europeon music from 1750 to 1850. Both presentations were 20 minutes in length.

There were two types of non-artistic stimuli: visual and auditory. The visual non-artistic stimuli consisted of 58 color slides of everyday events, people and objects. Each slide was presented for 20 seconds. The auditory non-artistic stimuli consisted of a 20 minute cassette tape of sounds. They were taken from several sound effects albums. As before, both presentation were 20 minutes in length.

The post-test consisted of the remaining 30 items from the Modal Imagery Test. These consisted of five items in each mode. A rating scale from 1 to 7 was provided for each item, where 1 represents "no image" and 7 represents "a very vivid

image." A retrospective questionnaire was administered after the post-test items. This questionnaire was concerned with the subject's memory of his or her imagery during the presentation of the various stimuli. The questionnaire consisted of two questions: 1) "Did you have any visual images during the presentation?" 2)"Did you have any auditory images during the presentation?" These questions were rated on a scale of 1 (no images) to 7 (very vivid images).

Procedure. Once all the subjects arrived, the instructions were read. Although the instructions naturally varied according to the treatment conditions, they were kept as similar as possible in length and basic procedure. All subjects were told prior to the treatments that they would be provided with "a relaxed and neutral experience so as to put them in the same relative state of mind before beginning." Once the instructions were read and all questions answered, the experimental treatments began.

The two artistic stimuli groups either viewed the art slides or listened to the music tape. The two art-information groups either read the art lecture or listened to the taped lecture of music. The two non-artistic stimuli groups either viewed the slides or listened to the tape of sound effects. The control group was instructed to sit and wait to be sure that

all the Subjects had arrived. In each case the treatment lasted 20 minutes except for the control group which lasted only 10 minutes. Since the control group had nothing to do, it was felt that 20 minutes would be too long to wait and boredom would set in. Hence, the control group was reduced to 10 minutes. Once the various treatments were complete, the subjects were given the post-test and the retrospective questionnaire.

Results

Pre-test analysis. In order to ensure that the groups were equivalent prior to the various treatment conditions, the two pre-test measures (the two questions on the subject's aesthetic background and the imagery items) were analyzed. The groups were found to be equivalent on the aesthetic background factor, $F(2,89) = .05, p > .05$. After the elimination of 14 subjects (due to extremely high or low imagery scores) the groups did not differ on either type of imagery prior to any treatments, $F(6,85) = 1.66$, $p > .05$. Therefore, the groups were equivalent on their imagery scores and aesthetic background prior to the treatments.

Post-test analysis. A 3 x 2 x 2 (repeated on factor C) factorial analysis of variance (with a control group) was performed. The dimensions of the analysis were; A) type of stimuli presented (artistic, art-information and non-artistic); B) mode of presentation (auditory and visual) and C) type of imagery

(auditory and visual).

The results revealed a significant A x B interaction; imagery scores varied as a function of the type of stimuli presented and the mode of presentation used, $F(2,76)=3.52$, $p < .05$. This was due only to the difference between the imagery (both auditory and visual combined) in the artistic condition; Imagery to music was significantly higher than imagery to art (M = 5.8 and 4.9 respectively), $F(1,75) = 3.94$, $p < .05$; see Figure 1.

Insert Figure 1 about here

This effect was also found on the overall modal analysis which included the four remaining modes on the Modal Imagery Test (cutaneous, olfactory, gustatory and kinesthetic). There was a significant A x B interaction, indicating that imagery depends on the type of stimulus presented and the mode of presentation, $F(2,76)= 6.19$, $p < .01$; (See Figure 2). As before, listening to music resulted in significantly greater imagery than viewing art slides; M = 5.4 and 4.3 respectively, ($p < .01$).

Insert Figure 2 about here

The A x B interaction for music and art stimuli was again reflected in the retrospective imagery scores. A 3 x 2 x 2 factorial analysis of variance similar to above showed a significant interaction between the type of stimuli presented and the mode of presentation used, $F(2,78)= 7.20$, $p < .01$. There was, once again, significantly higher imagery during the music presentation than during the art slides presentation ($p < .01$). See Figure 3.

Insert Figure 3 about here

With respect to the other non-art conditions, the overall modal analysis also revealed that listening to information on music yielded significantly less imagery than reading information on art. Also, listening to sounds had a significantly greater effect on imagery than viewing slides of everyday scenes. This was also found in the retrospective data (all at $p < .01$).

A significant main effect among the imagery modes was also found, $F(5,380)= 38.42$, $p < .01$. A Newman-Kuels multiple comparisons test revealed that gustatory imagery was significantly lower than all other modes. Olfactory and cutaneous modes were significantly lower than auditory, visual and kinesthetic but not different from each other (all at $p < .01$). However, with respect to the overall modal analysis, since these items from

the four modes were intended as fillers and the Modal Imagery Test's reliability with respect to these modes had not been checked, these findings may not be reliable.

Although the differences between music and art is rather clear, as reflected by all three analysis, it should be noted and unfortunately that neither the music or art groups differed from the control group.

Discussion

The results of this study found that music leads to significantly greater imagery than art. These results were demonstrated in the post-test analysis for the auditory and visual modes combined, for all six modes of imagery, and in the retrospective ratings. These results, however, were quite unexpected, since it was predicted that artistic stimuli in general, would yield higher imagery than non-artistic stimuli. Thus, any interpretations must be post-hoc in nature. Several interpretations are possible.

One possible explanation related to the "dynamic" differences between music and art. Music is temporal; it is constantly changing. Hence, the listener becomes involved with and responds to the changing stimuli. This encourages the listener to "fill in", which may in part be done with images. On the other hand, art is unchanging; there is no need to "fill in" or add to the stimulus. Given the relative restrictiveness of art,

compared to music, there is little involvement and hence little need for imagery to occur. In short, music can be "played with," art cannot. If it is indeed this "dynamic" dimension which plays a role in imagery, then the next step is to use more "dynamic" art, such as abstract art. Along these same lines, one can also employ more restricted music, such as music with lyrical content.

A second possible explanation of the differences between music and art is that music is more emotional than art and it is this quality which leads to greater imagery. Schoen (1968) has demonstrated that music does affect the emotional state of the individual and furthermore, that this is a source of increased imagery.

A third possible explanation is based on the assumption that music is a relatively "internal" experience. Music is primarily a more introspective experience. Being more personal, it leads to greater imagery. Art, on the other hand, is a more external experience; the stimulus demand close scrutiny. Thus, the individual concentrates on the external object more so than is true of music. Art is therefore less personal, because one is more detached. Since the spectator is less enmeshed with the stimulus, there is less imagery.

There interpretations also help account for the relatively high scores of the control group. These individuals were

actually in a relatively dynamic condition, in that they were allowed a ten minute period where free association could have occured prior to the imagery post-test. The groups given the non-artistic and art-information conditions could be considered as falling between the restrictiveness of the art group and the openness of the music group. This could account for the intermediary nature of their imagery. These groups could be considered more personal, more introspective and more emotional than the group given the art stimuli, but less so than the music group.

This study clearly demonstrates that there are differences in imagery aroused between music and art. The absence of a difference between the artistic condition and the two others, art-information and non-artistic, is likely due to a statistical artifact. The similarity between the three major conditions is due to the combining of the two extreme groups, music and art. The result, an intermediary degree of imagery, made the artistic condition apparently comparible to the other two conditions.

Still puzzling is the fact that the music and art groups did not differ significantly from the other four groups, including the control group. There are several ways of explaining this. It is possible that in the music condition, the imagery ratings could have been higher, but there was a

"ceiling effect". Due to the 7-point scale of the imagery test, the ratings could not have been higher. Another possibility is that the art-information and non-artistic groups as well as the control group ratings were inflated due to a practice effect. Taking the second part of the imagery test could have resulted in higher ratings regardless of the treatment.

The real puzzle then becomes why the art group was so low. It is possible that the transition from real art to rather prosaic words in the test resulted in the test being perceived as "dull." Since both the art and the imagery test were visual, there could have been a distortion or interference effect. After presented with a powerful stimulus, such as art, the test was, in a sense, disappointing. This possibility affirms the need for an ongoing measure of imagery, a test designed to measure imagery during the presentation of material without interfering with the material.

This study amplifies the role of imagery in art and music therapies and in art education. The results of this study demonstrates that there are differences between the effectiveness of artistic stimuli, namely, that music yields greater imagery ratings than art. Although several interpretations of this phenomenon have been offered, (i.e. music is more introspective, more emotional and perhaps more reflective),

the underlying nature of these differences are not apparent. However, at least in practical terms, music therapy might be more effective than art therapy. It may be speculated that music encourages the patient to be more introspective and thereby become more conscious of his self. This may then enable the patient to become explicit about and ultimately come to terms with his own conflicts and other problems. However, since this study did not directly demonstrate the influence of music during its presentation, the difference between art and music may be that music continues to exert an influence after the theraputic experience.

The results of this study also emphasize the importance of music education in the school systems. It appears that music education is more than teaching the child to sing. The exposure to artistic material, especially that of music, may help the child to become more introspective, more reflective and more conscious of his self in relation to his world. Further research should be pursued to examine "not only what methods are best in an educational setting but what observable effects, if any, result from each different set of materials, including the exposure to different artistic

stimuli (including music) at differnt ages,"(Monro, 1963, p. 57).

This study was an initial step towards an empirical effort to examine the role of aesthetic stimuli on imagery. In one sense, this study was a pilot study. The relationship between the arts and imagery has received little investigation. This study encourages the continual pursuit of the influence of artistic stimuli on imagery. Further research, such as exposure to different types of artistic stimuli (abstract art or contemporary music) appears to be the next step. As much as obtaining the "hard facts" further investigation along specific lines was the outcome of this study. The fact that music and art arouse different imagery will generate future research regarding the nature of imagery and artistic stimuli.

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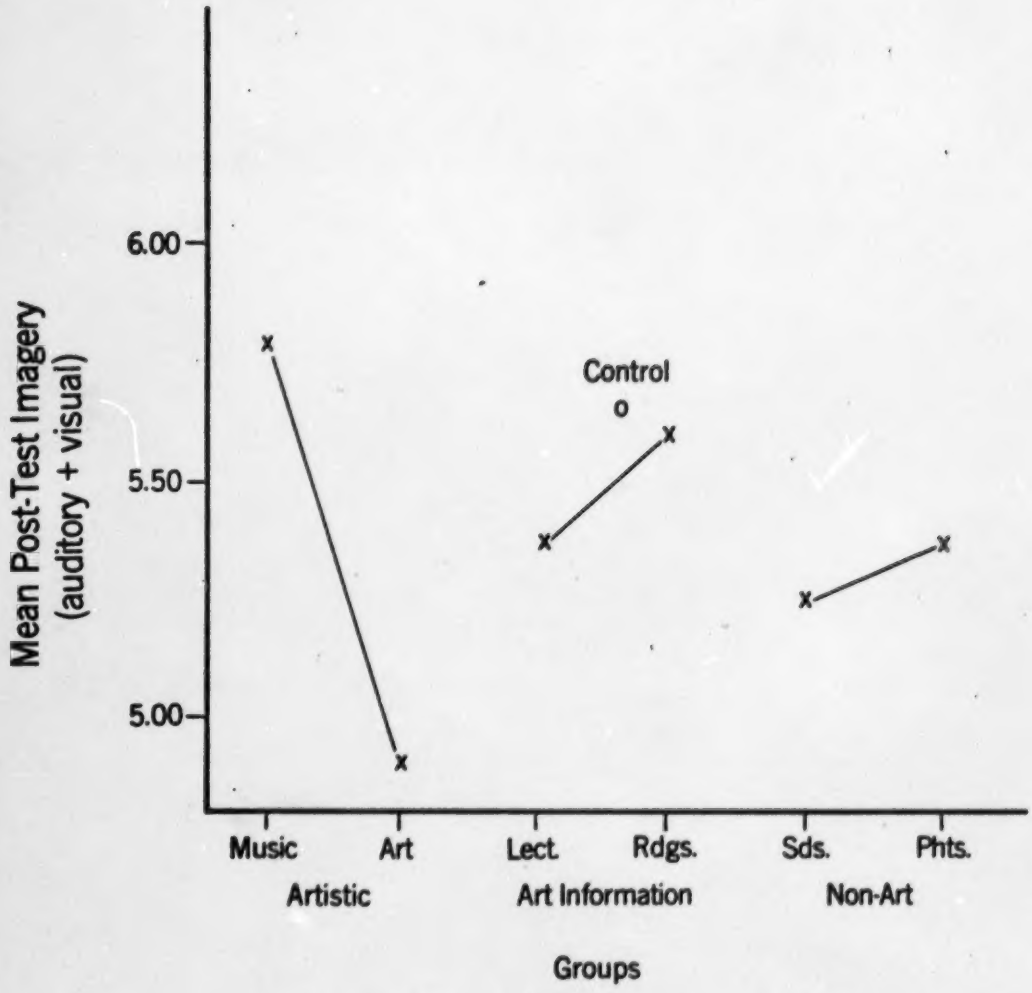
Footnotes

[1]The author is extremely grateful to Martin S. Lindauer for all his help and valuable advice and to the graduate students at Brockport for their help and support.

Figure Caption

Fig. 1. Post-Test Imagery Scores Reported by Groups.



Post-Test Imagery Reported by Groups

Figure Caption

Fig. 2. Post-Test Imagery Scores for All Modes.

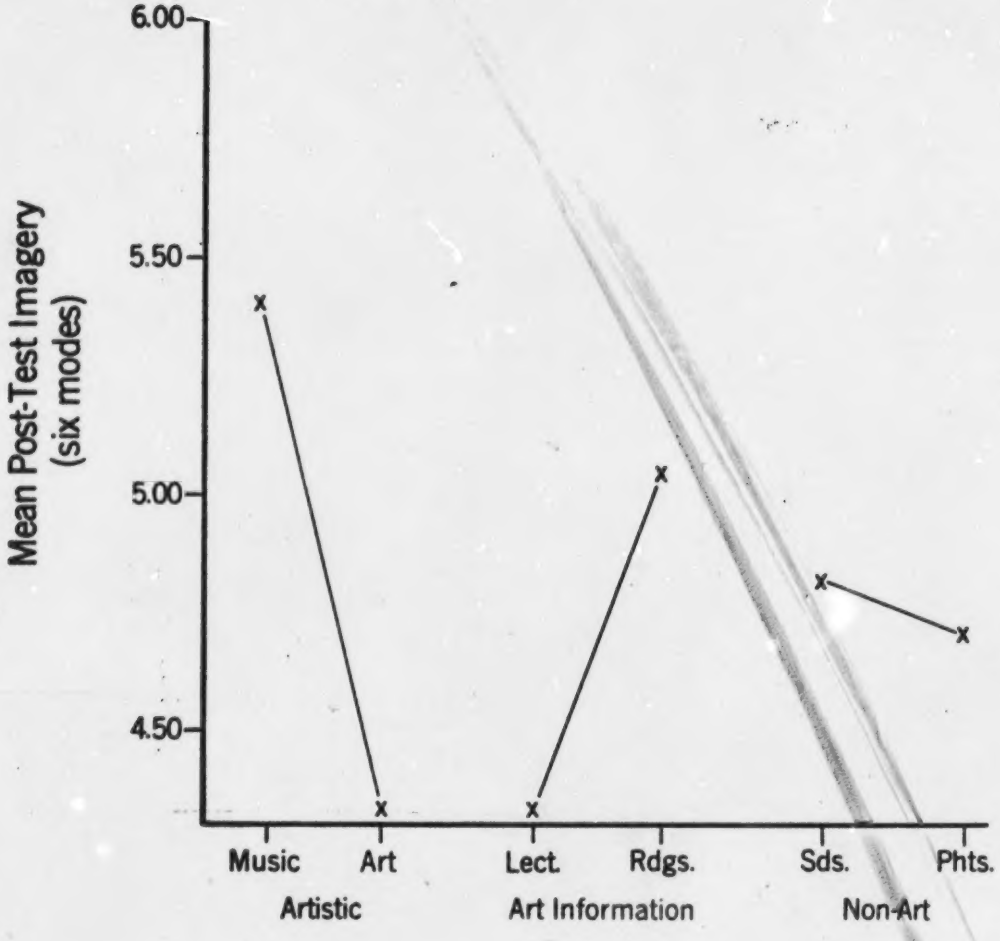
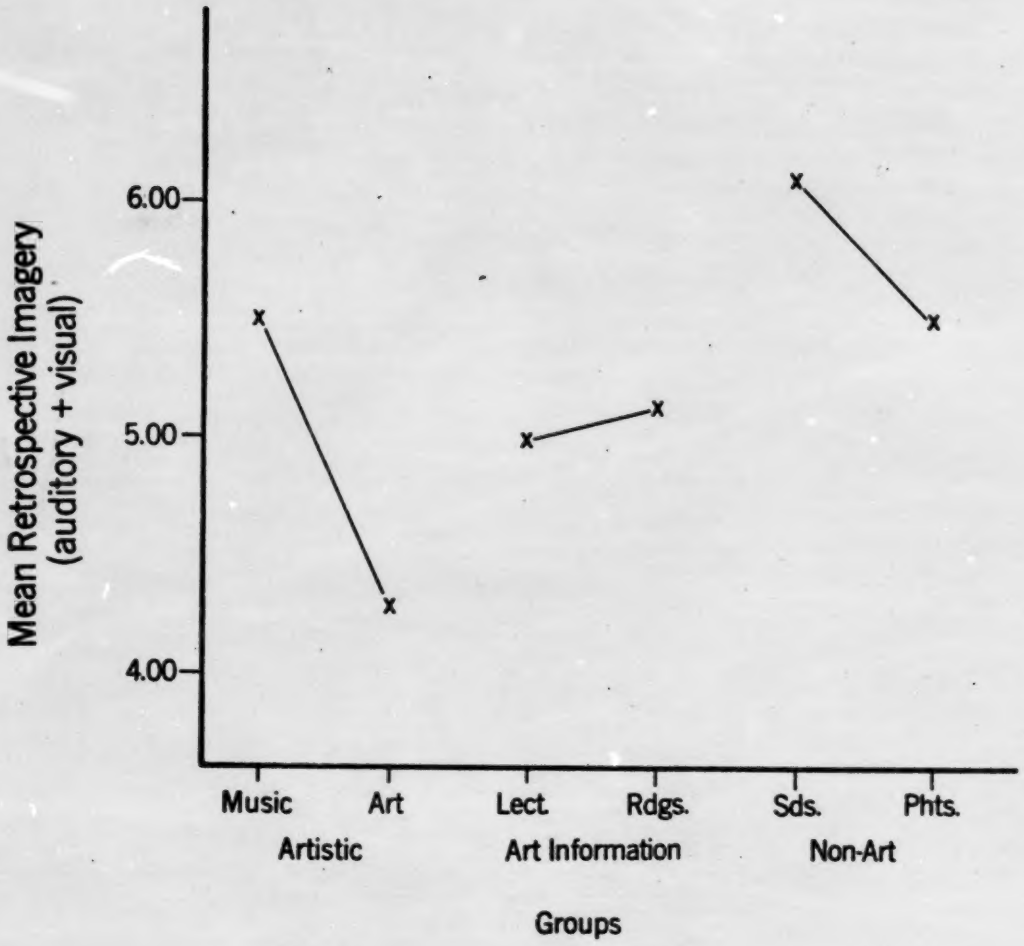

Mean Post-Test Imagery
(six modes)
6.00
5.50
5.00
4.50
Music
Art
Lect.
Rdgs.
Sds.
Phts.
Artistic
Art Information
Non-Art

Figure Caption

Fig. 3. Retrospective Imagery Reported by Groups.



Retrospective Imagery Reported by Groups